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ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Reallocation of the 216-220 MHz,	)	WT Docket No. 02-08
1390-1395 MHz, 1427-1429 MHz,	)	RM-9267
1429-1432 MHz, 1432-1435 MHz,	)	RM-9692
1670-1675 MHz, and 2385-2390 MHz	)	RM-9797
Government Transfer Bands	)	RM-9854
	)	RM-9882

REPLY COMMENTS OF FAIRFIELD INDUSTRIES, INC.

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March 18, 2002

SUMMARY OF ARGUMENT

Fairfield Industries, Inc. ("Fairfield") replies herein to comments filed by Data Flow Systems, Inc. ("Data Flow") and Paging Systems, Inc. ("Paging Systems"), both of which seek to limit use of the 217-220 MHz band for water utility telemetry or Automated Maritime Telecommunications System (AMTS). The Data Flow and Paging Systems proposals lack procedural and substantive merit.

Geophysical telemetry operations have been conducted in the 216-220 MHz band for many years. The NPRM is devoid of any suggestion or proposal that would preclude geophysical telemetry operation from 217-220 MHz (as Data Flow proposes), or limit its operation to 218-219 MHz (as Paging Systems proposes). Both of these proposals are therefore beyond the scope of the NPRM and any action by the Commission granting the relief these commenters seek would deprive affected parties of the notice required under the Administrative Procedure Act. In addition, Data Flow and Paging Systems in effect seek to reopen the allocation decisions reached in the Report and Order in ET Docket No. 00-221, FCC 01-382, released January 2, 2002. As such their proposals are improperly submitted as comments on service rules to implement allocation decisions.

Substantively, the Data Flow and Paging Systems proposals are unwarranted as a matter of spectrum policy. Geophysical telemetry, including three-dimensional survey techniques are, as the Department of Energy has recognized, critical components of the search for new domestic oil and natural gas reserves. The Commission also has recognized the importance of telemetry operations in scientific research and testing. The Commission is required to maximize the efficient and effective use of the radio spectrum and give priority to proposals for new technologies and services. Any reduction in the spectrum available for geophysical telemetry

would significantly hinder the use of the latest seismic measurement techniques, which rely on increased data and thus require more spectrum.

Water utility telemetry and AMTS have for years successfully shared spectrum with geophysical telemetry. Data Flow and Paging Systems have the burden to show that continued sharing of the spectrum would be inconsistent with the public interest. They have failed to do so.

Geophysical telemetry presents no risk of interference to other users. Rather, the risk is entirely to geophysical telemetry because of the very low power transmitters and highly sensitive receivers it employs. Geophysical telemetry is self-coordinating in that channels already in use are unavailable for telemetry operations (as are the adjacent channels). Geophysical exploration is conducted in remote, uninhabited areas and is temporary in nature. Fairfield is unaware of a single interference complaint involving geophysical telemetry equipment during more than 20 years of use of the 216-220 MHz band.

No basis exists to alter or limit the availability of 217-220 MHz for geophysical telemetry.

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To: The Commission

REPLY COMMENTS OF FAIRFIELD INDUSTRIES, INC.

Fairfield Industries, Inc. ("Fairfield"), by its counsel, hereby replies to certain of the opening Comments filed with respect to the 216-220 MHz band. In particular, Fairfield replies to comments filed by Data Flow Systems, Inc. ("Data Flow") and Paging Systems, Inc. ("Paging Systems"). Both entities seek preferences for particular classes of users seemingly to the exclusion of geophysical telemetry operations which have been conducted in the band for years. There is no basis for this relief in law or in policy.

INTRODUCTION

Fairfield is a privately-held, Houston-based company engaged in the geophysical exploration industry (also known as seismic exploration). Fairfield has pioneered the design and development of sophisticated telemetry equipment used in the search for oil and gas reserves. Fairfield's equipment is employed by many of the world's largest energy companies including many foreign governments. Its products are in use in the United States as well as China, Russia,

and Mexico. Fairfield is also active in the analysis of seismic data and licenses its products to numerous producers.

In its opening Comments, Data Flow argues that the spectrum from 217-220 MHz should be "dedicat[ed] ... to water utility telemetry applications." Id. at 4. It further contends that channel spacing should be reduced to 12.5 kHz and then 6.25 kHz; and that water utilities' telemetry should be elevated from secondary to primary status. Id.

Paging Systems, for its part, contends that there should be no new telemetry licensing in the Automated Maritime Telecommunications System ("AMTS") bands, namely, 217-218 and 219-220 MHz. Id. at 5. It goes on to argue that telemetry should be confined to 218-219 MHz. Id.

ARGUMENT

The relief sought by the Commenters threatens geophysical exploration, much of which is conducted in the 217-220 MHz band. Moreover, there is no basis for their arguments as against geophysical telemetry. Those arguments are deficient as a matter of administrative procedure, and as a matter of spectrum policy.

I. The Comments Are Deficient As A Matter of Procedure.

The relief sought by Data Flow and by Paging Systems is procedurally deficient for two reasons:

First. At no point in the Notice of Proposed Rulemaking did the Commission suggest that evicting geophysical telemetry operations from 217-220 MHz, or confining their operation to 218-219 MHz, was under consideration in this proceeding. The relief requested by the Commenters is thus beyond the scope of this docket. See Natural Resources Defense Council v. EPA, 824 F.2d 1258 (1st Cir. 1987) (agency failed to give proper notice regarding an adopted

rule when it failed to suggest that such a rule was being contemplated). The comments of Data Flow and Paging Systems cannot substitute for the notice the Commission is required to provide. AFL-CIO v. Donovan, 757 F.2d 330, 340 (D.C. Cir. 1985) ("As a general rule, [an agency] must itself provide notice of a regulatory proposal. Having failed to do so, it cannot bootstrap notice from a comment."). Thus, it would be unlawful to grant the relief Commenters seek due to the lack of notice to potentially impacted parties as prescribed by the Administrative Procedure Act. See 5 U.S.C. Section 553.

Second. Even if the Comments did not suffer from the Administrative Procedure Act defect, they should be disregarded as a matter of sound procedure. In seeking to reserve the band in question for one service or another, the Commenters would change the purpose of this proceeding. This proceeding was initiated in order to implement service rules for the allocation decisions reached in the Report and Order in ET Docket No. 00-221, FCC 01-382, released January 2, 2002. It was not intended to keep open in a second rulemaking allocations issues settled in the first. Thus, the Commenters' requests are misplaced.

Accordingly, there is no lawful basis for Commission consideration of the Data Flow / Paging Systems requests. If, despite this, the Commission should choose to reach the merits of the Comments, it is clear that the relief sought should be denied on policy grounds as well.

II. The Relief Requested Is Without Merit As A Matter of Policy.

The relief sought by the Commenters is also unwarranted as a matter of spectrum policy. In order to appreciate the scope of the issue presented by the Comments, some background on geophysical telemetry may be helpful.

A. Background

Geophysical exploration involves the simultaneous transmission of seismic data from numerous locations to a central receiver and digital recording unit. A sound source (such as an air gun) is used to introduce seismic energy into the earth's surface. The reflected energy is picked up by geophones/hydrophones, and the data is then transmitted to a central receiving unit.

Before the introduction of radio telemetry equipment, geophysical exploration relied on hard-wired equipment physically connecting each sensor to a central receiver. Because each sonic event (or "shot") requires the use of hundreds of separate measurement locations, use of hard-wired technology resulted in slow, cumbersome and very expensive operations with severe limits on the size of the geographic area studied.

Radio telemetry equipment eliminates the need to hard-wire each sensor to the central receiver and allows the deployment of more sensors over a larger area. This improves the quantity and quality of the data received, reduces the cost of each test, and is much more environmentally friendly (minimizing crew movement via heavy vehicles to and from hard-wired sensors is particularly important in sensitive areas such as tidal wetlands).

With radio-based telemetry systems such as Fairfield's, data is transmitted simultaneously via numerous channels to a high-gain Yagi antenna which in turn is connected to a very sensitive receiver. The data is transmitted in short bursts, usually no more than 30 seconds every three minutes or so. Each transmitter operates on a separate channel at very low power (no more than two watts) with an effective antenna height that does not exceed six feet.

In a typical seismic research study, the transmitters are moved from point to point along surveyed lines usually several miles in length. After data is collected in one area, the

entire system is moved to the next survey area and the process is repeated. Because the transmitters are backpacked by crew members, the units must be rugged and readily portable. This means that the transmitting apparatus and battery supply are as small and light-weight as possible. The size and weight limits in turn mandate the use of low power transmitters. The low power levels used by geophysical telemetry equipment places a premium on suitable propagation characteristics, i.e. it makes operation below 300 MHz essential. In other words, the superior propagation in this spectrum helps off-set the reduced operating range that results from low power operation.

The central receiving unit must be extremely sensitive in order to detect the low power telemetry transmissions. The trade-off, however, is that geophysical telemetry operations are highly susceptible to interference. Thus, prior to beginning any exploration work, field crews spend several days monitoring the spectrum in the area in order to identify channels on which other signals are present. Any channels which have activity present, as well as the two adjacent channels, are excluded -- in other words, geophysical telemetry is self-coordinating. Geophysical telemetry operations are often deprived of the use of 40, 60 or even 80 channels for this reason in any given area. This characteristic makes geophysical telemetry unique among the many secondary operations accommodated in the 217-220 MHz band.

For operation in offshore waters, Fairfield has developed equipment capable of three-dimensional ("3-D") survey techniques. This technique has significantly improved the quality and resolution of geophysical surveys compared to previous two-dimensional ("2-D") survey methods. 3-D surveys provide a dramatic improvement in the rate at which successful wells are drilled: At least one major U.S. oil and natural gas producer has reported a 63 percent improvement in the rate at which it is drilling successful wells (using two-dimensional

techniques the success rate is only 15-20 percent). With the search for oil and gas now often involving wells deeper than 20,000 feet, each of which costs on the order of $20 million, 3-D techniques are also an important risk control measure. However, 3-D survey techniques require the use of more sensors and transmitters placed at closer intervals, thereby increasing the number of channels required for each survey.

Most recently Fairfield has developed a 3-D shallow water data acquisition technique which uses four sensors instead of one. These sensors measure shear waves as well as compressional and pressure waves. Converted shear wave data provides additional vital information to help geologists detect oil and gas-related features concealed with compressional data alone.[1] This technique (known as "four component") requires approximately four times as much data acquisition, and hence more spectrum, compared with the conventional 3-D survey recording only compressional waves.

Finally, it should be noted that Fairfield's equipment was originally designed to operate in the 72-76 MHz band. However, interference from high-powered paging transmitters led Fairfield to design and develop equipment for 216-220 MHz for geophysical telemetry. This band not only offered suitable propagation, but was far superior from the standpoint of interference avoidance.

B. The Commenters Disregard The Importance of 217-220 MHz for Geophysical Exploration.

The Commenters' proposals disregard the importance of radio telemetry in the search for new domestic oil and gas reserves.

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[1] *See* John Norton and Rob Windels, *Seismic Acquisition Advances Put Subsurface In Focus*, The American Oil & Gas Reporter (April 1999) for a discussion of seismic techniques.

Locating new domestic natural gas and oil reserves has long been a national priority. However, as reserves have become depleted, it has also become more difficult to locate new sources of supply. The three-dimensional techniques referenced above are critical to the location of those new reserves. As the Department of Energy has described it:

> 3-D seismic imaging, today's leading imaging technology, has been a major contributor to Gulf of Mexico revitalization. Exploration well success rates have more than doubled from 19 percent to 40 percent (1985 to 1994), and production has increased by 37 percent (1990 to 1995).[2]
>
> * * *
>
> As one indication of the technology's significance, in 1989, only five percent of wells drilled in the Gulf of Mexico were based on 3-D seismic imaging, while in 1996, nearly 80 percent of wells drilled were based on 3-D seismic.[3]

However 3-D techniques, and newer techniques such as "four-component," require more spectrum to support the increased data requirements. Confining geophysical telemetry to 218-219 MHz, much less evicting it from 217-220 MHz altogether, goes in exactly the opposite direction: It reduces the spectrum available for geophysical work, rather than increasing it. While operators can also use 220-222 MHz, that band is not nearly sufficient to support the newer seismic techniques like 3-D. Moreover, non-radio (i.e. cable) systems are much more costly to operate and can inflict permanent damage on sensitive wetlands.[4] At a cost

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[2] Department of Energy, Oil and Gas RD&D Programs, p. 2-2 (February 1999).

[3] Id. p. 2-3.

[4] The vehicles used to place and retrieve cable systems operate on enormous tires. These vehicles weigh several tons a piece and leave permanent tracks in marshland.

of $60,000 per day for a field crew, the use of radio-based survey techniques has a major positive effect on the efficiency with which field crews can do their work.[5]

Frequencies in this spectrum range are particularly well suited for geophysical exploration. As noted above, geophysical work migrated from the 72-76 MHz band to 216-220 MHz due to the increasing interference to which telemetry was subject in the lower band. While not without its own interference issues, the 220 MHz range has proven to be far superior to the 70 MHz band from an interference standpoint. It is also ideal from a propagation standpoint. This too is a material factor in making the public interest judgment to protect availability of the band for geophysical exploration.

The Commission is charged with maximizing the efficient and effective use of the radio spectrum. Section 303(g) of the Communications Act prescribes that the agency "shall .... [s]tudy new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest." Section 7 of the Act directs the Commission to give priority to proposals for new technologies and services -- the burden being placed on opponents of such a proposal to demonstrate that it would be inconsistent with the public interest. 47 U.S.C. § 157. Preservation of the 217-220 MHz band for geophysical telemetry is certainly consistent with the thrust of Sections 7 and 303(g).

For these reasons, it would be contrary to national energy policy to preclude or otherwise restrict continued use of the band 217-220 MHz for geophysical exploration.

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[5] There is an inverse relationship between the number of channels available for any given seismic survey, and the length of time a survey requires; for example, halving the number of useable channels approximately doubles crew time and cost.

C. The Commenters Fail to Show That Continued Sharing Is Not Practical.

Even apart from preserving 217-220 MHz as a home for geophysical exploration is the fact that the Commenters fail to make any sort of factual showing that they cannot continue to share spectrum with low power telemetry users -- especially geophysical telemetry -- as they have for years. Absent such a showing, it would be arbitrary in the extreme to confine geophysical telemetry to 218-219 MHz, much less evict it from the band entirely.

Geophysical telemetry presents no risk of interference to other users. On the contrary, if there is any risk, it is to geophysical operations, not the reverse. Thus, they are perfect candidates for continued sharing. As noted previously:

- Telemetry transmitters are very low power with omnidirectional antennas attached directly to the sonobuoy or sensor.
- Seismic telemetry is self-coordinating. In other words, geophysical telemetry is not only secondary in law, it is secondary in actual operation. This makes it unique from a spectrum management standpoint.
- Geophysical exploration is typically conducted in remote, uninhabited areas, such as waters up to 30 miles offshore, in swamps and marshes, and on the North Slope of Alaska bordering the Arctic Sea.
- To the best of Fairfield's knowledge, there has not been a single interference complaint involving its equipment during the 20-plus years of geophysical exploration in the 217-220 MHz band.

* * *

Just over one year ago, the Commission recognized that the 216-220 MHz band supports many non-Government users. Indeed, the agency stressed that it was:

> "concerned about the continued viability of the incumbent non-Government services ... in the 216-220 MHz band, which, while not authorized on a primary basis, serve important public needs."

Notice of Proposed Rule Making in ET Docket No. 00-221, FCC 00-395, para. 12 (2000) (emphasis added).

In the Report and Order in the same proceeding, the Commission recognized in reference to geophysical telemetry among other types, that "telemetry operations play an important role in scientific research and testing." Id., FCC 01-382, released January 2, 2002 at para. 33 and note 101. The agency went on to observe that "many of these types of telemetry operations are temporary in nature and occur in areas with low population densities." Id. Moreover, the Commission expressly rejected requests like those by Data Flow and Paging Systems for special reallocations, e.g. requests to dedicate portions of the band to two-paging, to add two (2) more MHz for AMTS, to dedicate spectrum for real-time kinematic GPS use, or even to expand the secondary Amateur allocation in 219-220 MHz to include the entire 216-220 MHz band. Id. at paras. 28-32.

Given all this, there is utterly no reason to disturb the availability of 217-220 MHz for geophysical work. This is particularly the case since in ET Docket No. 00-221 the Commission determined to reserve 216-217 MHz for the Low Power Radio Service from and after January 1, 2002. Report and Order, supra, at para. 26. This further reduces the spectrum inventory for newly licensed geophysical operations.

III. Other Issues.

Finally, a few words about certain related issues, such as channel spacing, frequency coordination, and height / power limits raised in the Notice. See id. at paras. 59 et seq.

While Fairfield has no problem with Data Flow's suggested channelling scheme for water telemetry systems, the Commission should certainly not adopt any particular channelling for telemetry generally. The band has never had a channelling plan for secondary operations, and

there is no reason to adopt one now. On the contrary, flexible channelling has allowed telemetry designers to develop equipment which best meets the needs of its particular application. This in turn has facilitated the utilization of all manner of low power systems co-existing in harmony. This should not be changed.

The Notice suggests that private land mobile-type frequency coordination may be required for telemetry on the theory that coordination with the Interdepartment Radio Advisory Committee's Frequency Advisory Subcommittee will be going away. Id. at para. 65.

Preliminarily, this mixes apples and oranges. The fact that FAS coordination is going away does not warrant substitution of PLMR coordination for secondary users: The FAS process was meant to address coordination between Government and Non-Government users only -- not coordination between and among Non-Government users which is all that PLMR coordination can do.[6]

In any event, frequency coordination is particularly misplaced in the case of geophysical telemetry operations. The operations are too remote, too sensitive and too benign to impose the transaction costs associated with frequency coordination upon geophysical exploration firms. Most importantly, geophysical telemetry is self-coordinating. Thus, the Commission has eschewed frequency coordination for geophysical telemetry in the case of 220-222 MHz. See Rule 90.137(a).

Finally, there is no basis for particular height / power rules for geophysical systems. See id. at para. 67. These systems are designed to meet a unique set of requirements for a special application. The last thing the Commission should do is adopt generic rules which may not only

[6] To the extent there arises any need for coordination with the Government, the Commission may employ the very same process it has proposed for fixed and mobile operations. Notice at paras. 126-129.

be inappropriate for geophysical work, but hamper the ability of companies like Fairfield to meet the peculiar needs of geophysical research.

CONCLUSION

For the foregoing reasons, the Commission should reject requests that the band 217-220 MHz be dedicated to one or another particular purpose to the exclusion of geophysical telemetry. Rather, the Commission should preserve the long-established use of the band as a home for geophysical operations. Moreover, the Commission should not adopt height / power / channelling restrictions for geophysical operations, or require frequency coordination.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Yvette Morgan, hereby certify that the foregoing "Reply Comments of Fairfield Industries, Inc." was served this 18th day of March, 2002, by depositing a true copy thereof with the United States Postal Service, first class postage prepaid, addressed to:

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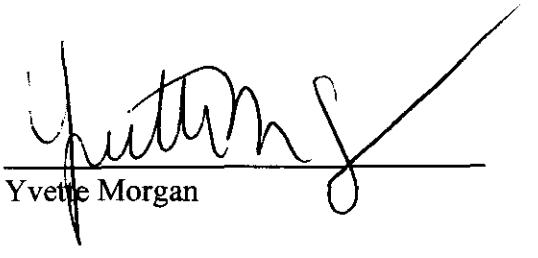

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